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## WINTER EGG PRODUCTION.

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The production of eggs in winter from pullets, and to some extent from hens, can be greatly stimulated by good methods of feeding, housing, and handling. Very few eggs are secured on the average general farm during the fall and early winter, when eggs bring the highest prices. Poultrymen, however, by better management secure a fair egg production during these seasons. The object of this paper is to point out methods of management which will help to increase winter egg production.

To receive good results from a flock of poultry during the winter all houses and coops should be in good condition, only healthy fowls placed in these buildings, and good care given to the poultry. These houses should be thoroughly cleaned, disinfected, and made tight for winter. If the house has a dirt floor it is well to remove the top 3 or 4 inches of dirt and replace this with dry gravel or sand. If it has a cement or wooden floor, remove all litter and dirt and put in 4 or 5 inches of fresh straw or litter. Be sure that the house is tight on three sides and that there is no chance for a draft to strike the hens. If hens roost or are placed in draft during the fall and winter, colds are sure to develop, which may result in roup and other troubles. From one-third to one-half of the south side, or front, of the poultry house may be made of curtains and windows, but should be under control, so that the openings may be closed gradually as the weather becomes cold. Have muslin curtains in the front of the house or leave a window partly open, even on the coldest nights, to allow some ventilation in the house. Fowls will stand considerable cold air provided it is dry, and ventilation will keep the air thoroughly dry in the house.

Before the pullets are mixed with the older fowls be sure that the hens are banded or that the web of the foot is punched in some way so that you can distinguish between the pullets and the hens. In this way the older stock may be culled out whenever it appears desirable, and the young hens kept for further laying. Do not keep hens for egg production over two years, but some of the best hens may be kept for breeders until 3 or 4 years old. The pullets that mature early in the fall and that molt late are usually the best layers and should be saved for breeding stock. Cull the chickens which are brought into the laying house carefully, and fatten and market all chickens which are small, poorly developed, or in poor condition. These small, poorly developed chickens are apt to catch cold if put in with the other poultry and develop diseases which quickly spread through the flock.

In order to get the greatest egg production in the early fall and winter it is essential to have well-matured pullets which were hatched in March or April. By early hatching and by supplying good conditions for egg production more eggs will be produced in the fall and winter, while a larger proportion of hens will go broody early in the spring, thus completing the necessary circle for early fall egg production.

Feed the grain in a deep litter on the floor and make the hens exercise for all of their grain. The mash may be fed either wet or dry, and should be so regulated that the fowls will get about equal parts of mash and of the scratch grains. It is necessary to give the fowls plenty to eat to get good results, but the birds should always be eager for each feed. In cold weather feed about one-third of the scratch grains in the morning and two-thirds at night, in which way the hens are forced to exercise more than if given all the grain they desired at the morning feed. Scratch grains, mash or ground grains, animal protein, green feed, grit, and shell, should be supplied in the winter. Good scratch mixtures may be made of equal parts, by weight, of cracked corn, wheat, and oats, or of two parts of cracked corn and one part each of wheat and oats. If wheat is relatively very high in price it may be left out of this latter mixture. In addition a mash made of three parts corn meal and one part each of wheat bran, wheat middlings, and beef scrap should be fed. Green feed,

such as cabbages, mangel wurzel beets, cut alfalfa, or sprouted oats should be fed during the winter to replace the green feed which the fowls have been securing in the fields; and beef scrap, skim milk, cut green bone, or some similar feed is needed to replace the bugs which the fowls have been securing on the range.

Beef scrap or feed of this nature is very essential in securing a good supply of eggs during the winter months and is the one essential feed often omitted by farmers. In the experiments conducted by the department an average production of 41.5 eggs for the first four months from pullets fed a ration containing beef scrap was secured, compared with 18.7 eggs from pullets fed the same ration without the beef scrap. The pullets not fed beef scrap practically stopped laying whenever the ground was covered with snow. The feed cost of their eggs was 2.2 cents higher per dozen for the year than for the pullets fed beef scrap. Skim milk or buttermilk will largely take the place of beef scrap, if a constant supply can be kept before the fowls, but if the supply of milk is limited some beef scrap should also be fed.

People raising poultry as a side issue in towns and villages can utilize waste products from their table and kitchen to very good advantage, producing fresh eggs and poultry for their own use as well as some surplus for market. As these scraps contain some waste meat, the proportion of beef scrap in the mash can be reduced accordingly. These table scraps can be mixed with the ground grains and fed as a moist mash.

Clean the dropping-boards at least once a week, and spray the roosts once a month during the winter with kerosene or some commercial preparation for killing mites. Have a good supply of sand or dry dirt on hand to use on the dropping-boards during the winter.

If any of the birds develop colds, put as much potassium permanganate as will remain on the surface of a dime into a gallon of water and keep this material in their drinking-water for several days, or until the symptoms of the colds have disappeared. Remove any sick birds from the flock as soon as noted and treat them in coops by themselves or kill and bury them if they are not worth treating.

Examine the pullets and hens for lice and dust thoroughly with a good insect powder or apply a mixture of equal parts of vaseline and mercurial or blue ointment, applying a piece about the size of a pea 1 inch below the vent of the bird, rubbing the mixture lightly on the skin. An application of this ointment two or three times a year will keep the fowls free from lice. Where insect powder is used, it should be applied three or four times a year, or oftener if the fowls become infested with lice. Provide a small box in the house, partly filled with dry road dust or fine dirt, in which the hens may dust themselves, thus helping to keep free from lice.

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